In the Claims

1. (Currently amended) A process for dissolving actinic oxides, the process comprising performing the steps of:

introducing the actinic oxides into a solution of nitric acid, wherein the actinic oxides include at least PuO or the mixed oxide $(U, Pu)O_2$;

treating the acidic solution in order to substantially remove palladium from the acidic solution; and

treating with divalent silver.

2. (Previously presented) The process of claim 1 which additionally comprises performing the steps of:

further treating the acidic solution in order to substantially remove palladium; and

further treating with divalent silver.

3. (Previously presented) The process of claim 1 wherein the actinic oxides comprise mixtures of UO_2 and PuO_2 or the mixed oxide $(U, Pu)O_2$.

4. (Previously presented) The process of claim 3 wherein the actinic oxide has a U:Pu ratio in the region of 95:5.

5. (Previously presented) The process of claim 3 wherein the actinic oxide has a U:Pu ratio in the region of 75:25.

6. (Previously presented) The process of claim 1 wherein the actinic oxides are comprised in spent nuclear fuel.

7. (Previously presented) The process of claim 1 wherein the actinic oxides are in the form of a solid, a slurry or suspension.

8. (Previously presented) The process of claim 1 wherein the treatment to substantially remove palladium comprises treatment by solvent extraction.

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9. (Previously presented) The process of claim 8 wherein said solvent extraction comprises extraction with triaurylamine, Alamine 336 in combination with tributyl phosphate and kerosene, a dialkyl sulphide or an organic phosphine sulphides or its derivative.

10. (Previously presented) The process of claim 1 wherein the treatment to substantially remove palladium comprises ion exchange.

11. (Previously presented) The process of claim 1 wherein the treatment to substantially remove palladium comprises denitration of the system by the addition of formic acid to cause palladium to precipitate from solution as the metal.

12. (Previously presented) The process of claim 1 wherein the nitric acid is provided as an aqueous solution at a concentration of 4M to 12M.

13. (Previously presented) The process of claim 12 wherein the concentration is 6M to 8M.

14. (Previously presented) The process of claim 1 wherein the temperature of the nitric acid is maintained in the region of 10-50°C.

15. (Previously presented) The process of claim 14 wherein the temperature is maintained in the region of 20-40°C.

16. (Previously presented) The process of claim 1 wherein the treatment with divalent silver comprises an electrolytic dissolution process.

17. (Previously presented) The process of claim 16 wherein the process comprises the addition of a source of monovalent silver to the system and treatment in an electrolyser to electrolytically regenerate divalent silver.

18. (Previously presented) The process of claim 17 wherein the source of monovalent silver is silver nitrate.

19. (Previously presented) The process of claim 1 wherein the treatment with divalent silver is carried out at a temperature between 5° and 50°C.

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20. (Previously presented) The process of claim 19 wherein said temperature is between 15° and 40°C.

21. (Previously presented) The process of claim 20 wherein said temperature is between 20°and 30°C.

22. (Previously presented) The process of claim 1 wherein the steps of the process are carried out in either a batchwise or a continuous fashion.

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